



SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT : Michael D. West
Jerry W. Shay
Woodring E. Wright
Elizabeth Blackburn
- (ii) TITLE OF INVENTION: THERAPY AND DIAGNOSIS OF CONDITIONS
RELATED TO TELOMERE LENGTH
AND/OR TELOMERASE ACTIVITY
- (iii) NUMBER OF SEQUENCES: 57
- (iv) CORRESPONDENCE ADDRESS:
- (A) ADDRESSEE : Lyon & Lyon
(B) STREET: 633 West Fifth Street
Suite 4700
(C) CITY: Los Angeles
(D) STATE: California
(E) COUNTRY: U.S.A.
(F) ZIP: 90071-2066
- (v) COMPUTER READABLE FORM:
- (A) MEDIUM TYPE: 3.5" Diskette, 1.44 Mb storage
(B) COMPUTER : IBM Compatible
(C) OPERATING SYSTEM: IBM P.C. DOS 5.0
(D) SOFTWARE: Word Perfect 5.1
- (vi) CURRENT APPLICATION DATA:
- (A) APPLICATION NUMBER: 08/060,952
(B) FILING DATE: 1993-05-13

(1) GENERAL INFORMATION:

- (iii) NUMBER OF SEQUENCES: 57
- (2) INFORMATION FOR SEQ ID NO: 1:
- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 60
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
TTAGGGTTAG GGTAGGGTT AGGGTTAGGG TTAGGGTTAG GGTAGGGTT AGGGTTAGGG 60
- (2) INFORMATION FOR SEQ ID NO: 2:
- (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
 CCCTAACCCCT AA 12
 (2) INFORMATION FOR SEQ ID NO: 3:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 12
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:
 TTAGGGTTAG GG 12
 (2) INFORMATION FOR SEQ ID NO: 4:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 18
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:
 CCCTAACCCCT AACCCCTAA 18
 (2) INFORMATION FOR SEQ ID NO: 5:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 18
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:
 TTAGGGTTAG GGTTAGGG 18
 (2) INFORMATION FOR SEQ ID NO: 6:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 24
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:
 CCCTAACCCCT AACCCCTAACC CTAA 24
 (2) INFORMATION FOR SEQ ID NO: 7:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 12
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:
 CCCTAACCCCT AA 12
 (2) INFORMATION FOR SEQ ID NO: 8:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 13
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:
 ACGGATGTCT AAC 13

(2) INFORMATION FOR SEQ ID NO: 9:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:
TTCTTGGTGT 10

(2) INFORMATION FOR SEQ ID NO: 10:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:
ACGGATGTCA CGA 13

(2) INFORMATION FOR SEQ ID NO: 11:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:
TCATTGGTGT 10

(2) INFORMATION FOR SEQ ID NO: 12:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:
AAGGATGTCA CGA 13

(2) INFORMATION FOR SEQ ID NO: 13:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:
ACGGATGCAG ACT 13

(2) INFORMATION FOR SEQ ID NO: 14:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:
CGCTTGGTGT 10

(2) INFORMATION FOR SEQ ID NO: 15:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 25
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:
ACGGATTGTA TTAGTTATGT GGTGT 25

(2) INFORMATION FOR SEQ ID NO: 16:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 25
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:
ACGGATTGTA TTAGGTATGT GGTGT 25

(2) INFORMATION FOR SEQ ID NO: 17:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:
CTGGGTGC 8

(2) INFORMATION FOR SEQ ID NO: 18:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:
TGTGGGGT 8

(2) INFORMATION FOR SEQ ID NO: 19:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 11
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:
GTGTAAGGAT G 11

(2) INFORMATION FOR SEQ ID NO: 20:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 5 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:
TGGTG 5

(2) INFORMATION FOR SEQ ID NO: 21:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 12
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:
ACGGATGTCA CG 12

(2) INFORMATION FOR SEQ ID NO: 22:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 11
(B) TYPE: nucleic acid

(C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:
 GTGTAAGGAT G 11
 (2) INFORMATION FOR SEQ ID NO: 23:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 26
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:
 TTAGGGTTAG GGTAGGGGG GGGGG 26
 (2) INFORMATION FOR SEQ ID NO: 24:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 26
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 24:
 TTAGGGTTAG GGTGGGGGG GGGGG 26
 (2) INFORMATION FOR SEQ ID NO: 25:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 26
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 25:
 TTAGGGTTAG GGTGGGGGG GGGGG 26
 (2) INFORMATION FOR SEQ ID NO: 26:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 16
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 26:
 CCCCCCCTA ACCCTA 16
 (2) INFORMATION FOR SEQ ID NO: 27:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 16
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 27:
 CCCCCCCAA CCCTAA 16
 (2) INFORMATION FOR SEQ ID NO: 28:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 16
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 28:
 CCCCCCCAC CCTAAC 16
 (2) INFORMATION FOR SEQ ID NO: 29:
 (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:
 TTAGGGTTAG GGTTAGGGTT AGGG 24
 (2) INFORMATION FOR SEQ ID NO: 30:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 37
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 30:
 CAATAATGTA TTAAAAATAT GCTACTTATG CATTATC 37
 (2) INFORMATION FOR SEQ ID NO: 31:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 23
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:
 TGGTACCGTC GAAAGCTTGA CTG 23
 (2) INFORMATION FOR SEQ ID NO: 32:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 14
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 32:
 ATGAACTGAC CTAG 14
 (2) INFORMATION FOR SEQ ID NO: 33:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 170
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 33:
 GATCTAGGCA CAGCTGCTTC TCATTAGGCA GGTCTCAGCT AGAAGACCAC TTCCCTCCCT 60
 GAGGAAGTCA ACCCTTCTGC CACCCCATGG CCTTGCTTAA ATTTTCAGAC TGTCGAATTG 120
 GAATCCTACC TCCATTAGCT ACTAGCTTGG GCAAGATACA GAGCCCTCCC 170
 (2) INFORMATION FOR SEQ ID NO: 34:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 116
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 34:
 ATATATGCGC TACATAAATG TATCTAGATG CAATTATCTA GATACATATA AGAAAGTATT 60
 TGAAGGCCTT CTACAAGGCT TAGTTATTAT ATTGGTTCAT ACAAGTTCTT CTTCAG 116
 (2) INFORMATION FOR SEQ ID NO: 35:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 176
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 35:

ATCCTTCTCC GCAAACCTAAC AGGAACAGAA AACCAAACAC TGCATGTTCT CACATCATTTG	60
TGGGAGTTGA ACAATGAGAA CACATGGACA CAGGGAGGGG AACATCACAC ACTCGGGGTG	120
TCAGCCGGGT GGGAGGGTAG AGGAGGAGAA ATACCTAAGT TCCAGATGAC AGGTTG	176

(2) INFORMATION FOR SEQ ID NO: 36:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 169

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 36:

GATCTATGCT ACCTCTAGGG ATGGCACCAT TCACAAGCAC AAAGGAGATG TCAGTGATTA	60
AAAACACATG CTCTGGAGTC TGAGAGACTT TGAGACTTGC TAGCTTGTGA CTCTGCAGAG	120
TTTAAGGTAT CTGGACCCCT TTTTCCCTCA TGTGCATAAT GAAGAGATT	169

(2) INFORMATION FOR SEQ ID NO: 37:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 192

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 37:

GATCAACACT GTTAGTTGAG TACCCACATC ACAAACGTGA TTCTCAGAAT GCCTTCCTTC	60
CTGTCTAGTT TCTATAGGTA GATATTTCTT TTTTCAGCAT AGGCCTGAAA AGCCGCCTCC	120
AAATGCCCCG CTTCCAGACA CTATAAAAAG AGGGTTCAAA CCTACTCTAT GAAAGGGAAT	180
GTTCAACACA GA	192

(2) INFORMATION FOR SEQ ID NO: 38:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 157

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ix) FEATURE:

(D) OTHER INFORMATION: The letter "N" stands for any base.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 38:

GATCTGTTTA TTATTCTTCC AATATCTCCC CATCTCTTAA AAATTGGTTA TTTCTTCGTT	60
CATACATTTT TATCTCCCAA ATTANNNTG AGACTGGTTT GAAGAGAGGA AAGCAATGTA	120
CACACTTTTA TATTCCACCA TGTATATCCG GATATCC	157

(2) INFORMATION FOR SEQ ID NO: 39:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 135

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 39:

AATCTCCTA CCTTAACCTC CCTTTGTTAG CCTGCCATTA CAGGTGTGAG CCACCATTC	60
TCATTCGTCC GTTTATTCAT TCAACAAATC AATCGATCTA TTACATGTGA GGGACTCTTC	120
AGGTCATGGG AATTC	135

(2) INFORMATION FOR SEQ ID NO: 40:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 117

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ix) FEATURE:

(D) OTHER INFORMATION: The letter "N" stands for any base.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 40:

GATCACTTGA GCCCAGGAGT TTGAGACCAG CCTGGGTGAC ATGGCAAAAC CCCATCTCTA 60

CCAAAAGAAA AAAANNNNAC AAATTGGTGG TGTGTATGGT CGGCGACCAT TGATCCC 117

(2) INFORMATION FOR SEQ ID NO: 41:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 137

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 41:

GATCAGGGAG GGGCCGAAAA CTGGAGATGC AGGTGTGCTG TAAGACACTG CAGAGAGGGC 60

ATTACCTGC CCCATCATCC AGCACAGGAA CAGCGACTGA CAGCGCTCAC CCACCCACCA 120

TCGCCAGTCA CACTGGG 137

(2) INFORMATION FOR SEQ ID NO: 42:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 80

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 42:

GGCTCGAGAA CGGGAGGAGG GGGCTCTTGT ATCAGGGCCC GTTGTCACAT CTGCTCTCAG 60

CTTGTTGAAA ACTCATAATC 80

(2) INFORMATION FOR SEQ ID NO: 43:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 157

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 43:

AGGTCCCTTG GTCGTGATCC GGAAGGGGC CTGACGTTGC GGGAGATCGA GTTTTCTGTG 60

GGCTTGGGGA ACCTCTCACG TTGCTGTGTC CTGGTGAGCA GCGCGACCA ATAAACCTGC 120

TTTTCTTAAA AGGAAAAAAAAA AAAAAAAAAA AAAAAA 157

(2) INFORMATION FOR SEQ ID NO: 44:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 120

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 44:

ATCTAGGTTT TTTAAAAAAG CTTTGAGAGG TAATTACTTG CATATGAGAG AATAAAACAT 60

TTGGCACATT GTTAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 120

(2) INFORMATION FOR SEQ ID NO: 45:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 149

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 45:

CTCATTTACT TTTCTCTTAT AGCGTGGCTT TAAACATATA TACATTTGTA TATATGTATA 60

TATGAATATA ATGTATAAAA TGTATGTAGA TGTATATACA AAAAATAAAC GAGATGGGTT 120

AAAGATATGT AAAAAAAAAA AAAAAA 149

(2) INFORMATION FOR SEQ ID NO: 46:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 142
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 46:
 AGTCCCAGCT ACTCGGGAGG GCTGAGGCAG GAGAATGGCG TGAACCCAGG AGGCGAAGCT 60
 TGCAGTGAGC TGAGATCGCG CCACTGCACT CCAGCCTGGA CGACAGAGCG AGACTCTGTC 120
 TCAAAAAAAAA AAAAAAAAAA AA 142

(2) INFORMATION FOR SEQ ID NO: 47:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 7 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 47:
 TGGTGTG 7

(2) INFORMATION FOR SEQ ID NO: 48:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 9 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 48:
 TGGTGTGTG 9

(2) INFORMATION FOR SEQ ID NO: 49:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 11 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 49:
 TGGTGTGTGT G 11

(2) INFORMATION FOR SEQ ID NO: 50:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 13 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 50:
 TGGTGTGTGT GTG 13

(2) INFORMATION FOR SEQ ID NO: 51:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 15 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 51:
 TGGTGTGTGT GTGTG 15

(2) INFORMATION FOR SEQ ID NO: 52:
 (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 6 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single

(D) TOPOLOGY: linear	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 52:	
TGGGTG	6
(2) INFORMATION FOR SEQ ID NO: 53:	
(i) SEQUENCE CHARACTERISTICS:	
(A) LENGTH: 8 base pairs	
(B) TYPE: nucleic acid	
(C) STRANDEDNESS: single	
(D) TOPOLOGY: linear	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 53:	
TGGGTGTG	8
(2) INFORMATION FOR SEQ ID NO: 54:	
(i) SEQUENCE CHARACTERISTICS:	
(A) LENGTH: 10 base pairs	
(B) TYPE: nucleic acid	
(C) STRANDEDNESS: single	
(D) TOPOLOGY: linear	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 54:	
TGGGTGTGTG	10
(2) INFORMATION FOR SEQ ID NO: 55:	
(i) SEQUENCE CHARACTERISTICS:	
(A) LENGTH: 12 base pairs	
(B) TYPE: nucleic acid	
(C) STRANDEDNESS: single	
(D) TOPOLOGY: linear	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 55:	
TGGGTGTGTG TG	12
(2) INFORMATION FOR SEQ ID NO: 56:	
(i) SEQUENCE CHARACTERISTICS:	
(A) LENGTH: 14 base pairs	
(B) TYPE: nucleic acid	
(C) STRANDEDNESS: single	
(D) TOPOLOGY: linear	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 56:	
TGGGTGTGTG TGTG	14
(2) INFORMATION FOR SEQ ID NO: 57:	
(i) SEQUENCE CHARACTERISTICS:	
(A) LENGTH: 16 base pairs	
(B) TYPE: nucleic acid	
(C) STRANDEDNESS: single	
(D) TOPOLOGY: linear	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 57:	
TGGGTGTGTG TGTGTG	16